

## FOOTWEAR FOR MAKING PERSONALIZED FOOTPRINTS

## Field of the Invention

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This invention relates generally to footwear and, in particular, to footwear having a sole portion from which material may be selectively removed to create personalized images or messages while walking.

## Background of the Invention

The idea of shoes that leave a customized or personalized imprint while walking is not new. U.S. Patent No. 4,050,167 describes an article of footwear having at least one recessed area in the sole, with a three-dimensional inset figure placed in the recessed area. The inset figure may be comprised of graphical and/or textual materials, and may be at least partially embossed. Although such a configuration would leave a corresponding impression while walking, it is doubtful that this was the primary intended objective of the inventor, since the textual material shown in the illustrations is right-reading, as opposed to reverse-reading, as would be required upon consideration that a footprint leaves a mirror image. The process making the article of footwear includes the steps of cutting thin rubber sheets, and forming them into a pressing mold.

U.S. Patent No. 4,050,168, which coincidentally issued on the same day as the '67 patent just described, discloses footwear with detachable symbols. Such symbols are arranged as desired on the sole, and adhesively applied thereto, such that the outline of the symbol is imprinted on a soft ground supporting surface as the sole engages the

U.S. Patent No. 4,958,446 is directed to footwear for the production of an advertising message. A disposable sandal is formed of sheet material, including a lower exposed surface with projections to finding a mirror image of the advertising message. The projections are sufficiently large that the advertising message is stamped repeatedly into the soil, in a form intelligible to the unassisted eye as the wearer walks.

While it would be interesting and enjoyable to leave the messages made possible by the prior-art footwear just described, each of the approaches are deficient, in that the messages are either integrally formed with the footwear, or the messages are applied additively. Although a shoe with an integrally formed message may be advantageous for advertisers, consumers would probably be unwilling to pay very much, if any, for such footwear, and they might need to be given away. As to the footwear which rely on additive techniques, the amount of available graphical and/or textual materials would be

severely limited, and a store would require a large inventory to please a wide range of potential consumers.

### Summary of the Invention

This invention improves upon the prior art by providing footwear for leaving a  
5 personalized imprint on wet sand and other surfaces through the removal of material as  
opposed to previous additive processes. The preferred embodiment comprises footwear  
with a sole portion having a bottom surface including a matrix of projections extending  
therefrom. Each projection is selectively removable, thereby enabling a user to remove a  
subset of the projections corresponding to the personalized imprint. The sole portion may  
10 form any type of shoe, including sandals, thongs, 'flip-flops,' and so forth.

Each projection preferably has a nominal length in the range of 3/16 to 3/8 inch  
and a nominal width in the range of 1/8 to 3/16 inch, and may be circular, triangular,  
rectangular, square, or hexagonal in cross-section. The matrix of projections may cover  
the entire bottom surface of the shoe, or a non-partitioned border may be provided which  
15 surrounds the matrix of projections. The sole portion may further be at least partially  
transparent, enabling the user to view the projections therethrough as they are being  
removed.

In use, a plurality of the projections are selectively removed to produce a mirror  
image corresponding to the personalized footprint. The sole portion is preferably such  
20 that it may be flexed to better expose projections to be removed. In the preferred  
embodiment, the composition of the projections is such that they may be removed by

hand as through 'plucking' without tools, though a pocket knife, nail clippers, spoon or other common implement may come in handy.

### Brief Description of the Drawings

FIGURE 1 is a perspective view of an embodiment of the invention;

5       FIGURE 2A illustrates the alternative use of triangular projections;

FIGURE 2B illustrates the alternative use of square projections;

FIGURE 2C illustrates the alternative use of hexagonal projections;

FIGURE 3 is a drawing that shows the way in which the sole may be flexed to better expose projections for removal;

10       FIGURE 4A shows the bottom surface of footwear according to the invention having been modified to produce a personalized message;

FIGURE 4B shows the other half of the footwear of Figure 4A, thereby completing the message;

15       FIGURE 5 shows the way in which the footwear having been modified in accordance with Figures 4A and 4B produces a personalized message on sand and other surfaces;

FIGURE 6A is a drawing which illustrates one way in which the sole of footwear according to the invention may be slit using a plurality of blades; and

20       FIGURE 6B illustrates the slitting of the sole of Figure 6A in a different direction, thereby creating a matrix of projections.

Detailed Description of the Invention

Figure 1 is a drawing from an oblique perspective which shows a preferred embodiment of the invention generally at 100. Footwear according to the invention preferably includes some form of upper 102, having a toe-receiving portion 104 and a heel-receiving portion 106. Straps 108 are also preferably provided, and include some form of fastener such as 110 facilitating adjustment for different sized feet. Although a knob-and-hole type of fastener is preferred because it may be integrally molded, other fasteners such as laces, Velcro® and stretchable members without fasteners *per se* may alternatively be used.

Although footwear for the left foot of a wearer is depicted in Figure 1, it would be appreciated that, to save on cost, footwear may be provided that fits either foot, thereby enabling a single mold to be used for both feet in the event of an injection-molded product. In addition, footwear according to the invention is also preferably made in a one-size-fits-all or -many, again, to save on cost and packaging. For example, the footwear may be made to fit a young adult wearing no shoes or stockings, but also enabling the same size to fit over the foot of a child with shoes on. By sizing the toe-receiving and heel-receiving portions and straps or fasteners accordingly, one size may then fit a range of individuals from child to adult.

In all embodiments, on the bottom or sole surface of the footwear according to the invention, there is provided a plurality of selectively removable projections or nubs 120. Although a border 122 is shown surrounding the modifiable portion, it will be

appreciated that the nubs or projections may extend to the edges of the bottom surface of the footwear, which may be advantageous according to certain manufacturing processes.

The projections 120 have dimensions, and are composed of a material which, in combination, allows them to be selectively removed, preferably without significant effort or specialized tools. In the preferred embodiment, these projections may be selectively removed by hand, or with a blunt instrument such as a small spoon, common pliers, nail clippers, and so forth. Of course, sharper objects such as pocket knives, and so forth, may alternatively be used under adult supervision. The flexing of this sole to permit easier access to the projections for the removal is depicted in Figure 3.

Depending upon the type of material used to produce the projections, the dimensions would preferably be on the order of 1/8 to 1/4 inch in diameter, and having a length of 1/4 inch to 1/2 inch. Using a material such as urethane or dense foam, projections having a nominal diameter of 3/16 inch and a length on the order of 3/8 inch might be ideal. It may also be advantageous to fashion at least the projections out of biodegradable material in the event that they are inadvertently left in beach areas or other public places.

Although projections having a circular cross-section are depicted in Figure 1, other cross-sectional geometries may be used, including triangular, square and hexagonal, as shown in Figures 2A-2C, respectively. Of course, different sizes and projection geometries may also be intermingled on the same shoe. It is preferable, however, that the matrix of projections is closely packed, with the sides of the projections ideally touching one another, to achieve the cleanest, most intelligible imprints.

In terms of manufacture, footwear according to the invention may be integrally molded in a plastic injection mold. However, since it is desirable to have a matrix of projections be as tightly packed as possible, footwear according to the invention may be molded without the matrix of projections, with the projections being added through a subsequent process such as a heated die, criss-crossed slicing, laser cutting, or other process.

As a further alternative, the projections may be separately provided in a tight mat, then glued on to the bottom surface. Indeed, such a mat might allow the nubs to be manufactured through an extrusion die, then slicing and glued onto the bottom surface of the foot, with the adhesive being used to adjust for removability in addition to other factors.

Advantageously, footwear according to the invention may be transparent or semi-transparent, allowing one to draw an image on the inside bottom of the shoe with a marker, for example, then hold the shoe up to the light and remove the projections while looking through the sole at the drawn image. This might assist younger people, for example, since textual messages would have to be made in a reversed process in order to be right reading while walking. One example is shown in Figures 4A and 4B, which show the right and left foot having been modified in reverse fashion, to create the effect shown in Figure 5. In addition, particularly when using a process whereby a mat of nubs are added to the bottom surface, the upper alone may be made transparent with the nubs themselves of a different or opaque color, further simplifying nub removal.

Figures 6A and 6B illustrate one in which the bottom surface of footwear according to the invention may be partitioned to produce a tightly packed matrix of projections. In Figure 6A, a roller 602 having a plurality of thin, sharp and/or serrated blades 604, is rotated while the sole 606 has moved relative thereto, creating a set of  
5 parallel slits 608. Figure 6B, the process the repeated in one or more different directions, using a roller 610 with blades 612 moving and rotating relative to the sole 606, thereby completing the creation of a densely-packed array of projections 620. With the directions of Figures 6A and 6B orthogonal to one another, the projections are square in cross-section, though additional passes may be used to create projections having triangular or  
10 other cross-sectional geometries.

I claim: